Low Frequency Astrophysics from Space

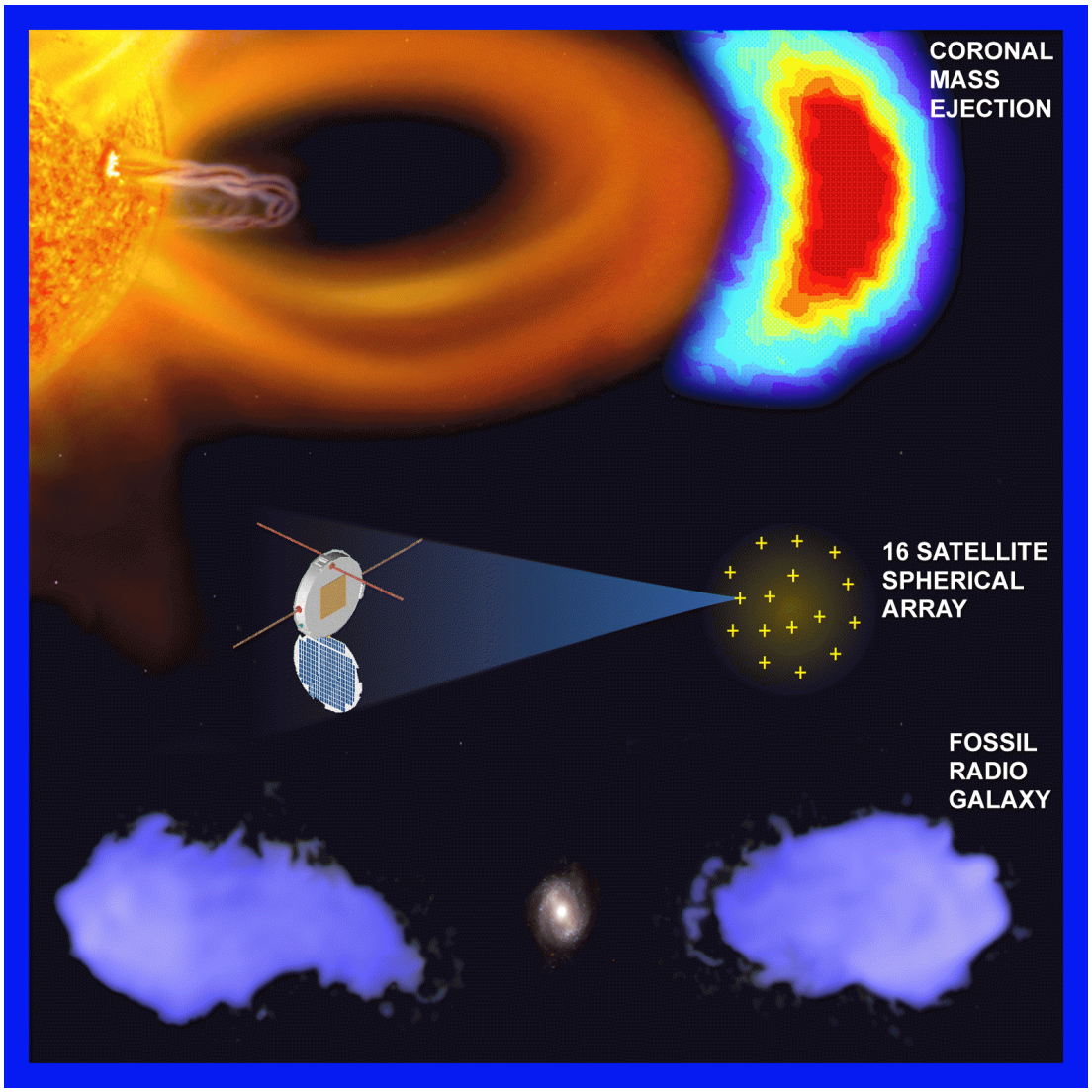
(Opening the Last EM Window on the Universe)

Summary of Space Initiatives to the Radio/Submm Panel

16 February 1999

(http://rsd-www.nrl.navy.mil/7214/weiler/lfraspce.html; http://sgra.jpl.nasa.gov/html_dj/ALFA.html)

The low frequency window from ~30 kHz (just above the local plasma frequency of the IPM) to ~30 MHz (where high resolution observations from the ground become possible most of the time) spans three orders of magnitude in frequency, wider than the infrared window opened by IRAS and ISO or the ultraviolet window opened by IUE and EUVE. It is the last region of the electromagnetic spectrum which is accessible from the vicinity of the Earth and still largely unexplored. Many important astrophysical questions concerning the solar system, Galaxy, and distant universe, such as CMEs, the distribution and turbulence properties of the interstellar and interplanetary plasmas, the lifetimes and evolution of extended radio sources, and the origin of cosmic rays can be answered with observations at frequencies of a few MHz and angular resolutions near an arcminute. From the Earth's surface, high angular resolution observations in this region of the spectrum are blocked by the obscuring veil of the ionosphere.



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